

Serial No. 10/536,486
Atty. Doc. No. 2002P14753WOUS

Amendments to the Claims: Please amend the claims as shown.

1 – 16 (canceled)

17. (currently amended) A layer system, comprising:
a substrate comprising an outer surface;
an intermediate layer having comprising a composition of MCrAlY at least partly
comprising grain diameters less than 22 micrometers, the intermediate layer applied to the outer
surface of the substrate; where M is an element selected from the group consisting of iron,
cobalt, and nickel; and
a coarse-grained layer comprising a composition of MCrAlY with particle diameters
greater than 80 micrometers, the coarse-grained layer applied as substantially a single layer of
particles on the fine-grained layer, forming a studded bonding surface with at least 20% more
surface area than the outer surface of the substrate; and an outer layer having particles of a coarse
grain size;

an outer ceramic layer applied to the studded bonding surface;
wherein the particles of the coarse grain size have grain diameters greater than 80
micrometers and the particles have a composition MerAlY and the particles are present on the
intermediate layer and the outer layer has been applied to the particles wherein the M in MCrAlY
represents an element selected from the group consisting of iron, cobalt, and nickel.

18. (currently amended) The layer system as claimed in claim 13, 17, wherein a further
layer between 40 and 80 micrometers thick comprising a composition of MCrAlY with a mean
grain diameter between 22 and 62 micrometers, is sprayed onto the studded bonding surface is
applied to the coarse particles prior to the application of the outer layer, wherein the M in
MCrAlY represents an element selected from the group consisting of iron, cobalt, and nickel.

19. (cancelled)

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20. (currently amended) The layer system as claimed in claim-13, 17, wherein the intermediate layer at least partially comprises particles of a fine grain size and in that the particles of a fine grain size have grain diameters of less than 22 micrometers, in particular approximately 50% of the grain diameters in the intermediate layer are between 8 and 22 micrometers.

21. (currently amended) The layer system as claimed in claim-13, 17, wherein the intermediate layer is dense.

22. (currently amended) The layer system as claimed in claim-13, 17, wherein the substrate is a cobalt- or nickel-based superalloy.

23-24. (cancelled).

25. (currently amended) The layer system as claimed in claim-13, 17, wherein the outer layer is a thermal barrier coating.

26. (currently amended) The layer system as claimed in claim-13, 17, wherein the intermediate layer is applied by plasma spraying.

27. (currently amended) The layer system as claimed in claim-13, 17, wherein the layer system is a gas turbine part.

28. (cancelled)

29. (currently amended) The layer system as claimed in claim-13, 17, wherein the particles have a grain size diameter diameters greater than 100 micrometers.

30-35. (cancelled)

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36. (new) A method of forming a layered wall of a gas turbine component, the method comprising:

applying an intermediate layer of MCrAlY comprising a grain size distribution between 8 and 44 micrometers to an outer surface of a metallic substrate;

applying a substantially single layer of MCrAlY particles greater than 80 micrometers in diameter to the intermediate layer, forming a particle-studded bonding surface on the intermediate layer with at least 20% greater surface area than the outer surface of the substrate;

and applying a ceramic thermal barrier layer to the particle-studded bonding surface;

wherein the M in MCrAlY represents an element selected from the group consisting of iron, cobalt, and nickel.

37. (new) The method of claim 36, wherein approximately half of the grain sizes in the intermediate layer grain size distribution are less than 22 micrometers.

38. (new) The method of claim 36, wherein the substantially single layer of MCrAlY particles are applied to the intermediate layer by a plasma spray process that melts only a surface region of the particles to allow bonding of the particles to the intermediate layer.

39. (new) The method of claim 36, wherein a surface portion of the intermediate layer is heated to a soft condition, and the MCrAlY particles are sprayed onto said surface portion of the intermediate layer at sufficient velocity that the MCrAlY particles penetrate into said surface portion of the intermediate layer, and are anchored therein.

40. (new) The method of claim 36, further comprising applying a spray material comprising a mean grain size of 22-62 micrometers in a layer 40 to 80 micrometers thick on the particle-studded bonding surface prior to applying the ceramic thermal barrier layer thereto.